(i) "That an Advisory Council consisting of nine members representing science and the principal primary and secondary industries be appointed who shall advise and co-operate with the directors in framing the policy and in the administration of the institute."

(ii) "That the members be appointed by the Governor-General in Council."

(iii) "That for the purposes of controlling and administering the institute and of collecting information and determining on the researches to be undertaken and directing their elucidation, three highly qualified salaried directors, of whom one should be chairman of the directors, shall be appointed by the Governor-General in Council. The directors shall seek the advice and co-operation of the Council and shall be *ex-officio* members thereof."

(iv) "That of the three directors one should be an expert business and financial man with ability in organisation; the other two should be chosen mainly on account of scientific attainments and wide experience."

(v) "The tenure of the directors shall be fixed by the Act."

(vi) "That the scientific staff should be appointed by the Governor-General in Council on the recommendation of the directors."

(5) The committee further resolved as follows:—

(i) "That all discoveries, inventions, improvements, processes, and machines made by workers directly employed by the institute should be vested in trustees appointed by it as its sole property, and should be made available, under proper conditions and on payment of gratuities or otherwise, for public advantage."

(ii) "That the council of the institute should be empowered to recommend to the Government the payment of bonuses to successful discoverers or inventors working under the auspices of the institute."

(iii) "That the institute should be empowered to charge fees for special investigations subject to regulations approved by the Governor-General in Council."

(6) Though these matters are not directly connected with the proposed institute the committee passed two further resolutions:—

(i) "That steps should be taken with a view to co-ordinating the work of our technical colleges and trade schools throughout Australia, so that a supply of scientifically taught craftsmen will be available to support the expansion of industry that it is hoped will result from the operations of the Institute of Science and Industry."

(ii) "That with a view to promoting our export trade in Australian products it is desirable that serious attention be given to the study of modern languages, including Oriental languages, for commercial purposes."

Immediate Arrangements.

(7) The committee realises that the establishment of the institute will necessarily involve some delay, but being impressed with the urgent need for work of the character proposed the committee resolved as follows:—

(i) "That until the institute is established an Advisory Council be appointed by the Governor-General in Council particularly to carry out the objects expressed in resolutions 2 (i) and (ii), viz.: 'To consider and initiate scientific researches in connection with, or for, the promotion of primary or secondary industries in the Commonwealth,' and (ii) 'The collection of industrial scientific information and the formation of a bureau for its dissemination amongst those engaged in industry.'"

(ii) "That the Federal and State Munitions Committees, heads of the Commonwealth and State scientific departments, and bodies representative of Commonwealth manufacture, commerce, agriculture, mining, and engineering, the universities and technical colleges, and private enterprises, be invited to suggest branches of industrial scientific research in which investigation would be of immediate practical use to producers and manufacturers."

(iii) "That the Advisory Council be appointed forthwith, and that when appointed it immediately take steps to initiate research work into the most pressing matters needing investigation and seek the co-operation of existing institutions and utilise the resources of staff and equipment at our disposal at the present time."

(iv) "The committee suggests for the consideration of the Advisory Council that the following problems, among others, are pressing:—The sheep fly pest; improved methods of extracting zinc from Australian ores, including the commercial manufacture of electrolytic zinc; the utilisation of brown coal with recovery of by-products; the introduction of a mechanical cotton picker; the eradication of the prickly pear; the production of aluminium and ferro alloys; the recovery of potash, manufacture of alkali, and condensation of sulphurous acid gas at present being wasted; the cultivation of useful indigenous grasses and salt-bushes; the manufacture of fine chemicals, drugs, and explosives.

It is, of course, impossible to predict, in matters of research, what the outcome of investigations may be. And the committee realises that not all the above subjects can be examined to the point of final results during the interval before the institute gets to work. The committee, however, suggests that in many, if not all, of the above matters most valuable work could be done in collecting data, and, in effect, making a preliminary census both as to present discoveries, and the staff and apparatus available in Australia. Such work is an indispensable first step in all research.

In addition to this, there is ample scope for practical work during the interval in vigorously prosecuting the dissemination of known information as to processes, etc., amongst our producers and manufacturers.

(v) "That funds be placed at the disposal of the Advisory Council for the above purposes."

(8) The committee desires to thank the Prime Minister for having placed at its disposal the services of Mr. Gerald Lightfoot, barrister-at-law, whose work as secretary has been greatly valued by the committee.

(Signed) Orme Masson (chairman), A. B. Piddington, G. D. Delprat, W. Russell Grimwade, J. M. Higgins, Wm. S. Robinson, George Swinburne, Alex. J. Gibson, Douglas Mawson, W. W. Forwood.

(Signed) Gerald Lightfoot, secretary to committee.

NOTES.

WE are glad that the *Times* has published in its Educational Supplement for March 7 a selection of letters upon the place of science in education received since the publication of the recent memorial on the neglect of science, to which we have referred on more than one occasion. The memorial was drawn up by a small committee of public-school science masters, and the thirty-six distinguished men of science who signed it subscribed to the views expressed in it without themselves being actively concerned with the construction of the document. If they and the professors at the Imperial College who supported them in a later short memorial to Lord Crewe, the chairman of the governors of the college, had met and discussed in detail the subject of science in national affairs, we might have had a manifesto which would have outlined a national programme on a scientific basis, instead of a memorandum on the defects of the public-school curricula and Civil Service examinations as regards the study of science, and their consequences in public administration and legislation. There is not much new to be said upon these subjects, and the scientific aspects have been surveyed in our own columns from every point of view. In a leading article the *Times* Educational Supplement acknowledges that men of science will have little difficulty in establishing the following contentions:—(1) That much of our present teaching is antiquated, and, in method, unscientific; (2) that natural science, if taught at all, has too small a place in the average curriculum; and (3) that our social organisation makes it far easier for literary than for scientific ability to find its level. These undoubted defects might well be placed before a committee, independent of any Government department, appointed to inquire into the entire question of the organisation of our educational system, as suggested by Sir Philip Magnus. The subject should be included in the national programme which, we learn from a letter by Sir William Mather and Sir Norman Lockyer, is being deliberated by the British Science Guild. Any suggestions for such a programme should be sent to the honorary secretaries of the Guild, 199 Piccadilly, W.

FURTHER regulations under the Defence of the Realm Act, issued on March 1, contain provisions prohibiting speculative transactions in the various metals required in the production of war material. The new regulation provides that it shall not be lawful for any person on his own behalf, or on behalf of any other person, to sell or buy iron (including pig-iron), steel of all kinds, copper, zinc, brass, lead, antimony, nickel, tungsten, molybdenum, ferro alloys, or any other metal which may be specified as being a metal required for the production of any war material. Rather curiously, tin, which is an important constituent of many naval alloys, including Admiralty gun-metal and Admiralty brass, and the price of which is very liable to sudden and large fluctuations owing to speculation, is absent from this list. On the face of it this metal should certainly have been included. The effect of these regulations on the operations of the metal exchanges of London, Birmingham, and Glasgow was at once evident. All business in regard to the above metals and alloys was suspended. A sobering influence on market prices should certainly result. A deputation from the London Metal Exchange was to discuss the situation with the Minister of Munitions on March 3.

PROF. W. KILIAN, of Grenoble, has contributed to the *Revue Scientifique* (vol. liv., pp. 33–40) a long and interesting article on proposals for the organisation of scientific research in France after the war. He points out how pre-eminent Germany has become in the provision of bibliographies, synoptical treatises, other works of reference, more or less international journals, and materials of every kind for laboratory work and the lecture-room. Writing as a geologist, he is able to enumerate many important illustrations with which the efforts of French scientific men and publishers compare very unfavourably. While admitting that the progress of science must never be hampered by international boundaries, he urges the importance of some organisation for raising the prestige of French science in the early future. He proposes that an association be formed for the better co-ordination of work in providing bibliographies and reference books; that more posts be endowed for pure scientific research; and that more effort be made to secure for French scientific men a fair proportion of the appointments abroad, which are usually filled by graduates from the great European universities.

THE sixth annual May lecture of the Institute of Metals will be given on Thursday, May 4, by Prof. W. H. Bragg, on "X-Rays and Crystal Structure, with Special Reference to Certain Metals."

THE twenty-fifth annual meeting of the Royal Society for the Protection of Birds will be held at the Middlesex Guildhall, Westminster, S.W., on Thursday, March 16. Mr. Montagu Sharpe, chairman of the council, will take the chair at 3 p.m.

WE learn from the *British Medical Journal* that Prof. M. Weinberg, of the Pasteur Institute, Paris, will deliver a lecture on bacteriological and experimental researches on gas gangrene before the Royal Society of Medicine (1 Wimpole Street, London, W.), tomorrow (Friday), at 5 p.m.

THE prize of 10*l.* and a silver medal, offered under the Peter Le Neve Foster Trust by the Royal Society of Arts, for an essay on "Zinc: its Production and Industrial Applications," has been awarded to Mr. J. C. Moulden, of Seaton Carew, co. Durham. Honourable mention has also been awarded to Mr. E. A. Smith, deputy assay master of the Sheffield Assay Office, for his essay.

THE Rev. E. W. Barnes, F.R.S., Master of the Temple; Mr. E. Newton, president of the Royal Institute of British Architects; and Prof. T. F. Tout, professor of medieval and ecclesiastical history in the Victoria University of Manchester, have been elected members of the Athenæum Club, under the rule which empowers the annual election of a certain number of persons "of distinguished eminence in science, literature, the arts, or for public services."

THERE will be a discussion on "The Sphere of the Scientific and Technical Press in Relation to Technical Education and Industrial Research" at the next meeting of the Circle of Scientific, Technical, and Trade Journalists, on Tuesday, March 14, in the hall of the Institute of Journalists (Tudor Street, Blackfriars, London, E.C.). The chairman of the circle, Mr. L. Gaster, will preside, and the discussion will be opened by Dr. William Garnett, late educational adviser to the London County Council.

THE following new officers and members of council were elected at the annual general meeting of the Institute of Chemistry on March 1:—*Vice-Presidents*: Dr. A. Harden and Prof. Herbert Jackson. *Members of Council*: Mr. R. Bodmer, Mr. H. C. H. Candy, Prof. G. G. Henderson, Mr. P. H. Kirkaldy, Dr. A

Lauder, Mr. Bedford McNeill, Prof. G. T. Morgan, Mr. D. Northall-Laurie, Mr. G. Stubbs, and Mr. T. Tickle.

THE Faraday Society will hold an informal discussion on "Methods and Appliances for the Attainment of High Temperatures in the Laboratory," on Wednesday, March 15, at 8 p.m., at the Institution of Electrical Engineers, Victoria Embankment, London, W.C. Dr. J. A. Harker, of the National Physical Laboratory, will open the discussion, over which Sir Robert Hadfield, the president of the society, will preside. Workers interested in the subject, and particularly those prepared to speak on the results of their personal experiences, are invited to be present and take part in the discussion. Further particulars may be obtained from Mr. F. S. Spiers, secretary of the society, 82 Victoria Street, London, S.W.

THE following officers and council of the Geological Society of London have been elected for the ensuing year:—*President*, Dr. A. Harker; *Vice-Presidents*, Sir T. H. Holland, Mr. E. T. Newton, the Rev. H. H. Winwood, and Dr. A. Smith Woodward; *Secretaries*, Mr. H. H. Thomas and Dr. H. Lapworth; *Foreign Secretary*, Sir Archibald Geikie; *Treasurer*, Mr. Bedford McNeill. In addition to these officers the members of the new council are:—Mr. H. Bury, Prof. J. Cadman, Prof. C. G. Cullis, Mr. R. M. Deeley, Prof. W. G. Fearnsides, Dr. W. Gibson, Dr. F. L. Kitchin, Dr. J. E. Marr, Mr. R. D. Oldham, Mr. R. H. Rastall, Prof. T. F. Sibly, Prof. W. J. Sollas, Dr. J. J. H. Teall, and Mr. W. Whitaker.

THE third Indian Science Congress met at Lucknow on January 13–15. The growing interest in scientific inquiry observable in India is evidenced by the rapidly increasing popularity of this body. In spite of the war, about seventy papers were read at the congress and more than 300 visitors attended the meetings. The list of papers discloses a surprisingly large volume of scientific work in India, and there is every reason to look for a successful and useful future of the congress. The presidential address was delivered by Sir S. G. Burrard, F.R.S., who took as his subject "The Plains of Northern India, and their Relationship to the Himalaya Mountains." Sir A. G. Bourne, F.R.S., has been elected president for 1916–17, and the next meeting will probably be held at Bangalore.

WE have received a provisional programme of the eighth meeting of the Italian Society for the Advancement of Science, arranged to be held at the Royal University of Rome on March 1–4. The session was originally intended to be held at Bari, but as this city is too near the theatre of war it was resolved to meet at Rome instead. The president was Prof. Camillo Golgi, the vice-presidents being Prof. Guido Castelnuovo and Prof. Vittorio Rossi, and the secretary Prof. Vincenzo Reina. The inaugural address, delivered by Prof. G. Cuboni, dealt with the problems of agriculture at the present time. General discourses were given by Prof. R. Nasini on Italian chemistry; by Prof. G. Valenti on hydraulic problems and water legislation; by M. Pantaleoni on economic lessons of the war; by G. Luigi on eugenics and the decay of nations; and by P. Fedele on imperialism in German history. Sectional papers were given by G. Levi on inorganic chemical industry; by E. Molinari on the industry of some important organic compounds; by F. Garelli on the industry of fats; by E. Miolati on electrochemical industry; by M. Ascoli on electrotechnics; by E. Bianchi on the state of the Italian industry of geodetic-astronomical instruments; by P. Gamba on the exploration of the upper atmosphere. In the medical-hygienic section C. Moreschi dealt with the prophylactic use of antityphoid and anticholera injections; V. Pensuti with vaccino-therapy of typhoid; and A. Perroncito and G. Grixoni with hygienic problems of modern war. A list of philosophical and geographical papers is also given in the programme issued.

THE death is announced of Prof. Vladimir A. Tichomirov, professor of pharmacy and materia medica at Moscow University and Russian Councillor of State.

THE death has occurred at Sheffield, in his sixty-fourth year, of Mr. G. T. W. Newsholme, who was the first provincial pharmacist to occupy the position of president of the Pharmaceutical Society. Mr. Newsholme became vice-president of the society in 1897, and in 1900 was elected president, holding the office for three years. He was a governor of Sheffield University.

THE death is announced, in his fifty-eighth year, of Dr. J. Nelson, a native of Copenhagen, and a graduate of the University of Wisconsin, who had occupied the chair of biology at Rutgers College, New Jersey, since 1888. He had also held various scientific appointments under the State of New Jersey, including membership of a tuberculosis commission and the post of investigator of oyster culture.

MR. L. DUNCAN, formerly associate professor of applied electricity at Johns Hopkins University, and head of the department of electrical engineering at the Massachusetts Institute of Technology, has died at the age of fifty-three. He was twice president of the American Institute of Electrical Engineers, and had written on electric traction for the "Encyclopædia Britannica." He served as consulting engineer during the electrification of the transit systems of New York.

THE death is announced, in his eighty-first year, of Dr. W. A. Knight, emeritus professor of moral philosophy in the University of St. Andrews. Prof. Knight was the author of many literary works, including "Studies in Philosophy and Literature" (1879), "Essays in Philosophy, Old and New" (1890), and "Varia, being Studies on Problems of Philosophy and Ethics" (1901), but he will be remembered chiefly as the devoted editor and interpreter of the poet Wordsworth and the Wordsworth family.

THE death has occurred in his sixtieth year of Prof. Pietro Grocco, director of clinical medicine in the R. Istituto di Studi Superiori of Florence. After studying in Paris and Vienna he was, we learn from the *Lancet*, appointed to a chair of practice of medicine at Perugia, which he occupied for three years, when he was elected to a post on the same subject at Pisa, whence in 1892 he was transferred to Florence. The Florentine school enjoyed his special care and generosity, founding as he did, mainly from his own resources, the Istituto Antirabico on the lines of Pasteur, and making the thermal waters of the neighbouring Montecatini a balneary centre in practical connection with his courses on the vast group of rheumatoid maladies. In 1905 he was made a senator of the kingdom, in accordance with Italy's custom to promote men of scientific distinction to the Upper Chamber, and here again his advice on intervention was of public benefit in more than one hygienic department.

THE death is announced, at seventy-two years of age, of Prof. E. Heckel, professor of botany in the University of Marseilles. We learn from the *Chemist and Druggist* that after the war of 1870 he became head pharmacist at Montpellier and assistant-professor at the local School of Pharmacy. Five years later he accepted the post of professor of natural history at the Nancy School of Pharmacy, but his stay there was short. After a few months at the Grenoble Faculty of Sciences, Heckel obtained two professorial chairs at Marseilles, teaching botany at the Faculty of Sciences and materia medica at the School of Medicine. To these double duties he added those of director of the Botanic Garden of Marseilles. In 1880 his contributions to science were recognised by his election to the corresponding membership of the Paris Academy of Medicine, and later by a similar election at the Academy of Sciences. It was in 1892 that he founded the Colonial Institute, where he placed his collections. He specialised in the study of such tropical plants as were likely to be of value for alimentary purposes or local industry, and his name is associated with the introduction of several of them into France.

THE *Times* of March 2 reports the death of Ernst Mach, once professor of physics in the University of Prague, but for the greater part of his academic life professor of the history and theory of inductive science at Vienna. The news will cause widespread regret, for, though Mach was not a great investigator or constructive thinker either in positive science or in philosophy, he did admirable secondary work for both by his illuminating interpretations of the history of physics. His psychological investigations, best represented by his book on "The Analysis of Sensations," had technical merits which earned high praise from so competent a judge as William James. They are interesting chiefly, however, as "studies" in the radical empiricism that found its most characteristic expression in his epistemological essays—particularly in his "Science of Mechanics." The essential positions of this famous work were (as Mach pointed out pathetically) published so long ago as 1868, that is, six years before Kirchhoff astonished the scientific world by the announcement of similar but less thoroughgoing views. The book itself appeared in 1883. It has undoubtedly had great influence not only upon current views as to the real nature of science, but also upon the actual development of mathematical physics from Hertz down to the relativists of the present day. In a farewell communication which the unhappy state of Europe makes the more dignified and touching, Prof. Mach "sends greetings to all who knew him and asks for serene remembrance." Men of good will in all countries will respond to the wish, for no chauvinistic bias distorted Mach's vision of the progress of the human spirit, and none has shown more clearly than he that in the disinterested pursuit of knowledge men of all times and tongues are members one of another.

THE recent completion, almost simultaneously, of three masonry dams for the main impounding reservoirs of important water supply systems in this country is an event somewhat unique in its way. None of the three structures—the Angram, the Derwent, and the Alwen Dams—is perhaps of such magnitude as the Kensico Dam in the United States, to which reference was made in our issue of January 27 (p. 602), but they are all noteworthy examples of this department of waterworks engineering. The Angram Dam, in Yorkshire, holds up 1250 million gallons of water derived from the river Nidd and the Stone Beck, for the supply of the town of Bradford. The capacity of the reservoir formed by the Derwent Dam is 2000 million gallons; it forms the second instalment of a great scheme destined to serve the Derwent Valley, including the towns of Leicester, Derby, Sheffield, and Nottingham, and the counties of Derby and Nottingham. There are to be five dams in all in this undertaking, and the first, the Howden Dam, of about equivalent storage capacity with the Derwent Dam, was completed some few years back. The third dam of the three forming the subject of our note, the Alwen Dam for the Birkenhead Corporation Water Supply, holds up 3000 million gallons from the river Alwen. The reservoir capacity is thus much greater than that of either of the other two dams, but the structure itself is smaller, both as regards length and height. The crest is only 458 ft. long, and the height from the river bed 90 ft., whereas the crest of the Derwent Dam is 1110 ft. in length and 114 ft. in height, and the crest of the Angram Dam 1200 ft. long, and its height 130 ft.

THE Madras Museum has done good service to the study of Indian antiquities by publishing a new edition of the catalogue of prehistoric antiquities collected by the late Mr. R. B. Foote, which forms the most valuable portion of the museum collections. To this has been added a catalogue of the prehistoric antiquities, collected by Mr. A. Rea, of the great burial grounds of Adichanallur and Perumbair. These collections contain a large number of specimens of objects in metal and pottery, which are of the highest value for the study of the early history of the Dravidian races.

IN his presidential address to the Hellenic Society, published in part ii. of the Proceedings of the Society in 1915, Dr. W. Leaf discussed the history of Greek commerce, a subject dealt with in his important work on Homer and history, recently reviewed in these columns. He made the interesting suggestion that the society should undertake an edition of at least the three books of "Strabo's Geography" describing Asia Minor. This should be on the lines of Sir James Frazer's edition of "Pausanias," dealing in the first instance with topography, and summarising the stores of epigraphic and numismatological information, with an account of the many characteristic religions and myths of that region. Sir William Ramsay and Mr.

Hogarth have promised to assist in the proposed edition of Strabo, and it may be hoped that after the close of the war the Hellenic Society will be in a position to undertake this important work, which will be of the highest value to historians and geographers.

A very acceptable addition to our knowledge of the nesting habits of the Australian mistletoe-bird (*Dicaeum hirundinaceum*), by Messrs. S. A. Lawrence and R. T. Littlejohn, appears in the *Emu* for January. The authors were so fortunate as to be able to study the final stages of the building of the nest, and later to obtain photographs, both of the parents and nestlings. The former displayed extraordinary confidence, allowing the nestlings to be removed from the nest and feeding them on the hand of one of the photographers. The tameness of these birds enabled the authors to watch closely the peculiar method employed by them in extracting the seeds of Loranthus berries, which constituted a large portion of the food of the young, insects completing the dietary. The same number also contains some valuable notes by Mr. Charles Barrett on the spotted bower bird, with a photograph of its remarkable bower, or playing ground. This most interesting bird is unfortunately incurring the resentment of the fruit-growers on account of the damage it is said to inflict on the orchards, a charge, however, which does not seem to have been established.

In the January number of that admirable journal, *California Fish and Game*, it is announced that an attempt is to be made to interest the fish-dealers of San Francisco in a project for the production of caviare from the roes of salmon and shad. M. Cotoff, a Russian expert, is the moving spirit in this project, which, it is to be hoped, will meet with success, since about half a million pounds of salmon roe from the canning stations in San Francisco are thrown away annually. It is claimed that caviare thus made will exceed in quality the imported caviare made from the sturgeon. The same number contains a lucid account of experiments which have been made recently to test the effect of strychnine sulphate on the California Valley quail. Barley soaked in this poison is now used to eradicate the ground squirrels, and hence it was feared the quail might be involved in their destruction. Experiments have shown, however, that the squirrels are very susceptible to strychnine, while the quail, under natural conditions, may consume relatively large amounts of this poison without hurt. This conclusion has been arrived at in consequence of a series of experiments on a number of captive quail. In one case 280 grains of barley containing no fewer than 40 milligrams of strychnine were ingested, and yet without any toxic symptoms, while, in a squirrel, 19 grains of barley containing as little as 2·7 milligrams of poison sufficed to produce convulsions and death within ten minutes. The grain in this case was not swallowed, but merely taken into the buccal pouches, where the poison was absorbed through the mucous membrane of the pouch. The maximum dose of poison taken by a squirrel was 5·7 milligrams taken up with 40 grains of barley, death taking place within an hour.

Symons's Meteorological Magazine for February inaugurates the commencement of the second half-century of its issue. A tentative summary of the rainfall over the British Isles for January shows that the general rainfall for England and Wales was 89 per cent. of the average, that for Scotland was 147 per cent., for Ireland 86 per cent., and for the British Isles as a whole 109 per cent. An article on "The Mildness of January, 1916, in London," presumably from the observations at Camden Square, shows the month to have been unique for its temperatures compared with the observations from 1858 to the present time. The mean temperature for the month was 45·7°, which is 7·2° above the average, and exceeds by 1·8° the next highest value, 43·9°, which occurred in 1884, A discussion by Mr. H. A. Hunt, Commonwealth Meteorologist, on the "Temperature Departures in Australia, 1915," exhibits the remarkably warm winter and greater part of the year 1915, the excess of temperature in June and July being more than 5° over Central Australia. The article is illustrated by a series of temperature charts embracing the whole of Australia.

The series of articles on the "Economic Resources of the German Colonies" in the Bulletin of the Imperial Institute is concluded in the current number (vol. xiii., No. 4) with an article on Germany's recent possessions in the Pacific. The large amount of zinc required for war purposes and the resulting increased demand lend special interest to an article on the sources of the metal within the British Empire. By far the most important zinc deposits in the Empire are those of the Broken Hill Mines, New South Wales, the output of which alone is sufficient to supply the entire demands of the United Kingdom. The Broken Hill ore before the war went mainly to Germany for smelting, but the Australian Government has adopted measures which will prevent this in the future. The issue also contains useful reports based on the work done at the Imperial Institute on Indian opium, tobacco from Cyprus, copra from Queensland, cocoa from Nigeria, piassava from British West Africa, and asbestos from South Africa.

The January number of the *Journal of the British Science Guild* contains a number of articles dealing with organisation and education and with the application of science to warfare. A letter written by the president, Sir William Mather, to the Prime Minister in July last, dealing with the application of the scientific resources of the country to the prosecution of the war, is printed in full. Of particular interest to opticians and glass manufacturers are the specifications of three types of microscopes and a list of educational institutions which have undertaken to use only British-made chemical glass apparatus during the war and for a period of three years after. Dr. H. S. Willson contributes an article on organisation and education. The part played by science in war is dealt with by "Anagapa." Prof. R. A. Gregory contributes a timely article on the introduction of the metric system. Experience of the past eighteen years has shown that permissive legislation is not of much practical effect. The Weights and Measures Act of 1897 rendered it lawful to use the metric system in this country for the general purposes of trade, but little advantage has been taken of it, either in internal or external trade. The system must be made compulsory before the trading community as a whole will take advantage of it. Several recent instances show that the metric system can be introduced without the difficulties which some people suppose would come with it.

AN article by Mr. R. G. Skerrett in the *Scientific American* for February 12 describes Fricke's apparatus for locating vessels at sea during fogs. It depends on the difference in the time required for a wireless signal and for a sound signal sent out from the same point at the same instant to reach some distant point. This difference is proportional to the distance apart of the sending and receiving points. The receiving apparatus consists of a wireless receiver and sixteen telephones arranged at equal angular intervals round the ship, and so protected that each will respond only to sounds coming in approximately its direction towards the ship. The arrival of the wireless signal starts sixteen bands travelling outwards from a common centre towards the sixteen corresponding telephones. The arrival of the sound signal at the telephone directed towards the quarter from which the sound originates actuates a marking point carried by the corresponding band, and a mark is made on the under side of a piece of translucent paper placed over the bands and ruled with concentric circles representing the number of miles of the source from the vessel. The marking points are brought back to the zero circle after each observation, and a series of observations gives the direction, distance, and course of the source from the ship.

IN the last number of the Proceedings of the Geologists' Association (December, 1915) Dr. A. Holmes gives a useful summary account of the manner in which the study of radio-active minerals can be applied to the measurement of geological time. The science of radio-activity has already destroyed the argument by which Lord Kelvin deduced a relatively short age for the earth from its apparent rate of cooling. But the same science also furnishes data for a direct estimate of the age of a rock which contains radio-active minerals. There is doubtless a considerable margin of error, but the best results are consistent, and seem to be reasonable. Prof. Strutt's method was based upon the accumulation of helium from the gradual break-up of uranium and thorium. Dr. Holmes takes instead the ratio of the final product, lead, to uranium, and his results are in general higher than Strutt's, probably owing to the loss of helium by leakage. Various Carboniferous and Devonian intrusions are estimated to have an age of the order of 300 to 400 millions of years, and for granitic intrusions of the Middle pre-Cambrian is deduced an age of the order of 1000 to 1200 millions of years. Such figures will be comforting to geologists who dislike hurrying unduly the operations of nature.

IN the current number of the Transactions of the English Ceramic Society there are several important papers, notably one by M. Bigot on the distribution of heat in pottery ovens, and one on pottery pyrometry by Mr. R. W. Paul. There is a memorial lecture on the famous ceramic artist, M. Solon, by Mr. Hobson, of the British Museum, and a number of papers of purely technical interest by Messrs. Audley, Dressler, Guy, Hill, Mellor, Singleton, and Wilson. The English Society is doing good work in getting the empirical experience of the potters into a systematic form, so that the underlying principles may finally be made clear; and it is gradually winning for itself general recognition among the manufacturers who pay for the work of abstracting the home and foreign pottery, clay, and glass journals. These abstracts are an important feature of the journal.

THE following forthcoming books of science are announced, in addition to those referred to in recent issues of NATURE. By *George Allen and Unwin, Ltd.*—Elements of Folk Psychology: Outlines of a Psychological History of the Development of Mankind, W. Wundt, translated by E. L. Schaub; Anthropomorphism and Science: A Study of the Development of Ejective Cognition in the Individual and the Race, O. A. Wheeler. By *D. Appleton and Co.*—The Book of Forestry, F. F. Moon; The Care and Culture of House Plants, H. Findlay; The Fundamentals of Plant Breeding, J. M. Coulter; Sanitation in Panama, W. C. Gorgas; Irrigation Management, F. H. Nowell; Irrigation in the United States, R. P. Teele; The Theory of Steam Traction Engineering, S. R. Eighinger and M. S. Hutton; Minerals and Rocks, W. S. Bayley. By *A. and C. Black, Ltd.*—A Manual of Mendelism, Prof. J. Wilson; First Principles of Evolution, Dr. S. Herbert, new edition, illustrated; A Manual of Medical Jurisprudence, Toxicology, and Public Health, Dr. W. G. A. Robertson, new edition, illustrated; Diseases of Children, Dr. A. D. Fordyce, illustrated. By the *Cambridge University Press.*—A Factorial Theory of Evolution, Prof. W. L. Tower; Chemical Signs of Life, S. Tashiro (University of Chicago Science Series.) By *Cassell and Co., Ltd.*—Alfred Russel Wallace: Letters and Reminiscences, J. Marchant. By *J. and A. Churchill.*—Handbook of Colloid Chemistry: the Recognition of Colloids, Theory of Colloids, and their General Physico-Chemical Properties, Dr. W. Ostwald, translated by Prof. M. H. Fischer. By *John Murray.*—Agriculture after the War, A. D. Hall. By the *University of London Press.*—The New Regional Geographies, L. Brooks, vol. i., The Americas, vol. ii., Asia and Australia, vol. iii., Europe and Africa; An Economic Geography of the British Empire, C. B. Thurston. By *Witherby and Co.*, under the title, "A Veteran Naturalist," a life of the late Mr. W. B. Tegetmeier, by his son-in-law, Mr. E. W. Richardson.

WITH reference to the note in NATURE of March 2 (p. 16), Mr. Perrycoste writes to say that he pointed out not only the advantages consequent on the suggested use of Latin, but the counterbalancing risks and the necessity of discarding Latin "prose-composition," as well as Latin verse.

IN the article on "The Utilisation of Peat" in NATURE of March 2, it should have been stated that the blocks of Figs. 1 and 2 were lent to us by the Department of Agriculture and Technical Instruction for Ireland, which, as stated on p. 19, publishes the pamphlet from which the article was abridged. Fig. 3 was from a block lent by the Power Gas Corporation, Ltd., Stockton-on-Tees.